

# Non-Carious Cervical Lesion: Case Report

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## Abstract

Non-Carious Cervical Lesions (NCCL) are characterized by irreversible and gradual loss of mineralized tissue near enamel-cement junction, and they may cause dentin hypersensitivity, characterized by an acute and short-term pain. They can be treated through restorative procedures and removal of etiologic agents. This case report used composite resin for restoring one NCCL in inferior premolar. Selective acid etching and two-step adhesive system were done. The final result provided a satisfactory aesthetic, besides eliminating dentin hypersensitivity.

**Keywords:** Composite Resins, Dentin Hypersensitivity, Non-Carious Cervical Lesions, Occlusal Adjustment

## 1. Introduction

The dental practice is evolving while new researches have been done, bringing new knowledge to the professionals of this field. This knowledge makes possible a more preventive practice and focused on recognizing the causes of the mouth problems which affect the population. In face of this more conservative conduct, it's possible to observe a decrease in more invasive procedures, like multiple extractions, extensive preparations for fixed prosthesis, carious lesions among others<sup>1</sup>.

With the increase in maintenance of dental elements in the oral cavity, and a greater control over bacterial changes, which lead to the appearance of carious lesions and periodontal diseases, other problems began to grow inside the change group that affect the population, such as dental wear, dental hypersensitivity and temporomandibular disorder<sup>2</sup>.

Among the dental wear changes, we can mention Non-Carious Cervical Lesions (NCCL). This group includes lesions that are characterized by the loss of hard dental tissue in the cervical area, near Enamel-Cement Junction (ECJ), which, by causing dentine exposure, may lead to

the development of dentin hypersensitivity and gingival recession<sup>2,3</sup>.

NCCLs have a multifactorial origin, which may occur due to Mechanical Tension Factors (MTF), biocorrosion or friction. Based on the prevalence of origin factor, clinically, it's possible to observe different types of lesions, from mild depressions to large wedge-shaped defects with sharp internal lines angles or disk-shaped lesions with angles of wider and rounded lines<sup>4,5</sup>. These factors can work together or individually, but studies believe that the cooperation of factors is more important than an isolated factor in the development of the lesion<sup>1,2,6</sup>.

Lesions with wedge-shaped angles are often related to MTF, in which eccentric occlusal forces are upon the tooth, resulting in tension stress, leading to the rupture of enamel structure and the dentine structure at a distant point from the application of forces<sup>7</sup>, and at rounded lesions, the associated factors are biocorrosion and abrasion, in which hard tissues are removed by the acids action in the diet or stomach, or by frequent contact of substances or objects on dental surface<sup>4</sup>.

Restoration of lesion and removal of the prevalent causative factor are the treatment forms for NCCL. It's

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important that these lesions are restored, getting back the dental element shape and function; reducing the dentin hypersensitivity, lesion advances, pulp involvement, dental fracture, biofilm accumulation and possible development of carious and periodontal lesions<sup>2,3</sup>.

The purpose of this work is, through a clinical case report, to deal with the operative conduct in control and treatment of NCCL associated with dentin hypersensitivity.

## 2. Case Presentation

A female patient, 40 years old, leucoderma, sought dental care complaining about dentin hypersensitivity at premolars area. After clinical examination, it was found that she had NCCL in the inferior premolar. After occlusal adjustment and selection of restorative material, relative isolation was done with the help of a dental cheek retractor, cotton rollers and gingival retractor cord 00 (Maquira, Maringá/PR, Brazil), for a better access to cervical area, facilitating the restorative procedure and controlling the damp of the operative region (Figure 1).



**Figure 1.** Initial aspect of the lesion; inserted gingival retractor cord.

Acid etching of the enamel surfaces was done for 30 seconds and 15 seconds on dentine (Figure 2) with 35% phosphoric acid (Villevie, Joinville/SC, Brazil). After that time, a water jet was used to remove the contents. A light air jet was used to dry the enamel surface and to reduction of excessive damp of the dentine.

Adper Single Bond 2 adhesive (3M/ESPE, São Paulo-SP, Brazil) had been applied with the help of a micro brush, in two layers (Figure 3), according to the manufacturer, and then a light air jet was applied and light cured for 20 seconds at power of 420mW/cm<sup>2</sup> (Schuster, Emitter A Fit, Santa Maria/RS, Brazil). The



**Figure 2.** Acid etching.

composite resin Z100 (3M/ESPE, São Paulo-SP, Brazil) was added by incremental technique (Figure 4 and 5), in order to decrease the polymerization contraction and get restoration with little excess. After each increment photo activation was done for 40 seconds.



**Figure 3.** Adhesive application.



**Figure 4.** Initial increment of composite resin.



**Figure 5.** Final increment of composite resin.

After the final light curing, the absolute isolation had been removed, the immediate finishing was done with a spear-shaped diamond tip (KG Sorensen, Cotia/ SP, Brazil) (Figure 6). The restoration finishing was done in the same section, with a low-speed polishing drill, because the patient wouldn't be able to return later for completion (Figure 7).



**Figure 6.** Finishing with diamond tip.



**Figure 7.** Polishing.

### 3. Discussion

In recent years, with the aging of dentition, the group of NCCLs is growing, this occurs because the conduct of professionals is changing. They are seeking preventive and less invasive treatments. Due to this fact, many patients remain with the dentition for a longer period of time<sup>2,5</sup>.

The treatment of NCCLs consists in the removal the etiological factor and the lesion restoration. In the clinical case presented here, after the occlusal adjustment had been done, the restoration was done. Restoring these lesions is a clinical way to improve the distribution of tensions that affect the cervical region of the tooth, preventing further losses of dental structure. In addition, it reduces the possibility of sensitivity in the dental element, and also reduces areas of biofilm retention, which may result in incidence of carious lesions<sup>7</sup>.

The decision about using composite resin in tooth restoration followed studies which demonstrate that its use is positive, because there's no need for excessive removal of dental structure, besides presenting elasticity module similar to dentine, which offers a response in face of the similar occlusal load between them<sup>4</sup>. Although in the literature some authors indicate the use of glass ionomer, because it presents better adhesion to the dental structure compared to the composite resins, these have low adhesive resistance, low aesthetic longevity and low abrasion resistance<sup>2</sup>.

The use of bulk fill resins is also demonstrated in the literature as a good option to restore this kind of lesion, due to reduced volumetric contraction, low contraction stress and modulation of the polymerization reaction, reducing the clinically undesirable effects of polymerization contraction<sup>7</sup>.

To achieve a successful restoration, it's necessary that the finishing and polishing of composite resins are done properly. In this step, the coarse excesses are removed from the restoration, and the surface roughness of the restoration is reduced<sup>8</sup>. It's very important to do good finishing and polishing because when these irregularities are present, they may induce surface stains, plaque retention, secondary caries, gingival irritation, greater surface wear<sup>8,9</sup>.

Although studies report that the polishing of the composite resin must be done 24 hours after its completion<sup>10</sup>, in this clinical case it was decided to do it in the same session, because the patient would not be able to return to the clinic for this final procedure.

## 4. Conclusion

Based in this case report, the use of resinous materials for non-carious cervical lesions restorations demonstrated a satisfactory aesthetic result and after the end of the procedure, the dentin sensitivity had ceased. It's important to highlight that, for the long-term restorative success, it's fundamental the removal of etiologic factors which causes the lesion.

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